Received
Bureau of Land Management

OCT 13 2017

Montana State Office
Billings, Montana

CENTER for BIOLOGICAL DIVERSITY
because life is good.

October 13, 2017

Via FEDEX Overnight Delivery

Jon Raby
Acting State Director
Bureau of Land Management
Montana State Office
5001 Southgate Drive
Billings MT 59101

Re: Protest of BLM December 12, 2017 Montana Miles City Competitive Oil and Gas Lease Sale.

Dear Mr. Raby:

The Center for Biological Diversity (the "Center"), the Montana Chapter of the Sierra Club and the Sierra Club National, hereby file this Protest of the Bureau of Land Management's ("BLM") planned December 12th 2017 oil and gas lease sale and updated Environmental Assessment DOI-BLM-MT-C020-2017-0051-EA, pursuant to 43 C.F.R. § 3120.1-3. The Center, et al formally protest the inclusion of each of the following 204 parcels for internet-based competitive sale of federal lands containing 99,265.87 acres located in the Miles City Field Office (MCFO). The analysis area includes the following eight counties with nominated parcels: Big Horn, Custer, Carter, Fallon, Garfield, Powder River, Richland, and Rosebud counties.

12-17-01 MTM 108952-C4	12-17-02 MTM 108952-C6	12-17-03 MTM 108952-DB	12-17-04 MTM 108952-C7	12-17-05 MTM 108952-DC	12-17-06 MTM 105431-M3	12-17-07 MTM 105431-M9	12-17-08 MTM 105431-NC	12-17-09 MTM 105431-M4	12-17-10 MTM 105431-MU
12-17-11 MTM 105431-MP	12-17-12 MTM 105431-MV	12-17-13 MTM 105431-M6	12-17-14 MTM 105431-ND	12-17-15 MTM 105431-NE	12-17-16 MTM 105431-NL	12-17-17 MTM 105431-NM	12-17-18 MTM 105431-NF	12-17-19 MTM 105431-NA	12-17-20 MTM 105431-MW
12-17-21 MTM 105431-MR	12-17-22 MTM 105431-MQ	12-17-23 MTM 105431-NB	12-17-24 MTM 105431-NG	12-17-25 MTM 105431-NP	12-17-26 MTM 105431-NH	12-17-27 MTM 105431-N7	12-17-28 MTM 105431-N8	12-17-29 MTM 105431-N9	12-17-30 MTM 105431-PC
12-17-31 MTM 105431-PD	12-17-32 MTM 105431-PE	12-17-33 MTM 105431-PF	12-17-34 MTM 105431-PJ	12-17-35 MTM 105431-MM	12-17-36 MTM 105431-LV	12-17-37 MTM 105431-LW	12-17-38 MTM 105431-MD	12-17-39 MTM 105431-LQ	12-17-40 MTM 105431-LR
12-17-41 MTM 105431-LT	12-17-42 MTM 105431-MF	12-17-43 MTM 105431-QG	12-17-44 MTM 105431-NV	12-17-45 MTM 105431-NW	12-17-46 MTM 105431-N3	12-17-47 MTM 105431-RA	12-17-48 MTM 105431-RC	12-17-49 MTM 105431-RF	12-17-50 MTM 105431-RJ
12-17-51 MTM 105431-RK	12-17-52 MTM 105431-RL	12-17-53 MTM 105431-RN	12-17-54 MTM 105431-RP	12-17-55 MTM 105431-R4	12-17-56 MTM 105431-TD	12-17-57 MTM 105431-TH	12-17-58 MTM 105431-TJ	12-17-59 MTM 105431-TP	12-17-60 MTM 105431-TW

Diana Dascalu-Joffe • Senior Attorney • 1536 Wynkoop, Ste. 421 • Denver, CO 80202
Phone: (720) 925-2521 •ddascalujoffe*@biologicaldiversity.org*

12-17-61 MTM 105431-T4	12-17-62 MTM 105431-RB	12-17-63 MTM 105431-RQ	12-17-64 MTM 105431-RT	12-17-65 MTM 105431-RU	12-17-66 MTM 105431-T6	12-17-67 MTM 105431-T7	12-17-68 MTM 105431-UA	12-17-69 MTM 105431-UQ	12-17-70 MTM 105431-LM
12-17-71 MTM 105431-LN	12-17-72 MTM 105431-U7	12-17-73 MTM 10543I-VA	12-17-74 MTM 105431-VC	12-17-75 MTM 105431-VD	12-17-76 MTM 105431-VL	12-17-77 MTM 105431-W6	12-17-78 MTM 105431-VT	12-17-79 MTM 105431-VU	12-17-80 MTM 105431-VV
12-17-81 MTM 105431-VW	12-17-82 MTM 105431-VX	12-17-83 MTM 105431-V3	12-17-84 MTM 105431-V7	12-17-85 MTM 105431-V9	12-17-86 MTM 105431-WA	12-17-87 MTM 105431-WB	12-17-88 MTM 105431-WC	12-17-89 MTM 105431-WD	12-17-90 MTM 105431-WE
12-17-91 MTM 105431-WG	12-17-92 MTM 105431-WH	12-17-93 MTM 105431-WJ	12-17-94 MTM 105431-WP	12-17-95 MTM 105431-WQ	12-17-96 MTM 105431-X3	12-17-97 MTM 105431-WY	12-17-98 MTM 105431-W7	12-17-99 MTM 105431-XA	12-17-100 MTM 105431-XB

12-17-101 MTM 105431-XL	12-17-102 MTM 105431-HC	12-17-103 MTM 105431-HD	12-17-104 MTM 105431-HE	12-17-105 MTM 105431-J3	12-17-106 MTM 108952-CW	12-17-107 MTM 105431-X4	12-17-108 MTM 105431-X8	12-17-109 MTM 105431-YD	12-17-110 MTM 105431-6X
12-17-111 MTM 105431-6Y	12-17-112 MTM 105431-68	12-17-113 MTM 105431-69	12-17-114 MTM 105431-YE	12-17-115 MTM 105431-YF	12-17-116 MTM 105431-YH	12-17-117 MTM 105431-YM	12-17-118 MTM 105431-YL	12-17-119 MTM 105431-YQ	12-17-120 MTM 105431-YT
12-17-121 MTM 105431-YU	12-17-122 MTM 105431-YV	12-17-123 MTM 105431-YX	12-17-124 MTM 105431-YY	12-17-125 MTM 105431-Y3	12-17-126 MTM 105431-Y4	12-17-127 MTM 105431-Y6	12-17-128 MTM 105431-Y9	12-17-129 MTM 105431-QK	12-17-130 MTM 105431-QL
12-17-131 MTM 105431-QM	12-17-132 MTM 105431-HK	12-17-133 MTM 105431-HL	12-17-134 MTM 105431-HM	12-17-135 MTM 105431-3A	12-17-136 MTM 105431-3B	12-17-137 MTM 105431-3C	12-17-138 MTM 105431-3J	12-17-139 MTM 105431-3Q	12-17-140 MTM 105431-3R
12-17-141 MTM 105431-3T	12-17-142 MTM 105431-3U	12-17-143 MTM 105431-3V	12-17-144 MTM 105431-3W	12-17-145 MTM 105431-3X	12-17-146 MTM 105431-3Y	12-17-147 MTM 105431-34	12-17-148 MTM 105431-4G	12-17-149 MTM 105431-4J	12-17-150 MTM 105431-4M
12-17-151 MTM 105431-4N	12-17-152 MTM 105431-4P	12-17-153 MTM 105431-4Q	12-17-154 MTM 105431-4R	12-17-155 MTM 105431-6G	12-17-156 MTM 97300-J2	12-17-157 MTM 105431-QP	12-17-158 MTM 105431-QQ	12-17-159 MTM 105431-QU	12-17-160 MTM 105431-QV
12-17-161 MTM 105431-QW	12-17-162 MTM 105431-7K	12-17-163 MTM 105431-7N	12-17-164 MTM 105431-7R	12-17-165 MTM 105431-76	12-17-166 MTM 105431-8B	12-17-167 MTM 105431-8C	12-17-168 MTM 105431-8T	12-17-169 MTM 105431-8Y	12-17-170 MTM 105431-83
12-17-171 MTM 105431-9A	12-17-172 MTM 105431-9E	12-17-173 MTM 105431-9J	12-17-174 MTM 105431-99	12-17-175 MTM 105431-9V	12-17-176 MTM 105431-9X	12-17-177 MTM 108952-AC	12-17-178 MTM 108952-AD	12-17-179 MTM 108952-AE	12-17-180 MTM 108952-AM
12-17-181 MTM 108952-AN	12-17-182 MTM 108952-AR	12-17-183 MTM 108952-AT	12-17-184 MTM 108952-AU	12-17-185 MTM 108952-A9	12-17-186 MTM 108952-BE	12-17-187 MTM 108952-BV	12-17-188 MTM 108952-A3	12-17-189 MTM 108952-BJ	12-17-190 MTM 108952-BL
12-17-191 MTM 108952-B3	12-17-192 MTM 108952-B7	12-17-193 MTM 108952-B8	12-17-194 MTM 108952-CC	12-17-195 MTM 108952-CD	12-17-196 MTM 108952-CF	12-17-197 MTM 108952-CK	12-17-198 MTM 105431-KR	12-17-199 MTM 105431-KT	12-17-200 MTM 105431-KU
12-17-201 MTM 97300-EP	12-17-202 MTM 97300-FE	12-17-203 MTM 108952-CV	12-17-204 MTM 97300-GG						

PROTEST

I. Protesting Party: Contact Information and Interests:

This Protest is filed on behalf of the Center for Biological Diversity, the Montana Chapter of the Sierra Club and the Sierra Club National, and their board and members by:

Diana Dascalu-Joffe
Senior Attorney
Center for Biological Diversity
1536 Wynkoop, Suite 421
Denver, CO 80202
ddascalujoffe@biologicaldiversity.org

Jonathan Matthews
Chairperson, Montana Chapter of the Sierra Club
1601 N. Benton Avenue
Helena, MT 59625
j.c.matthews@alumni.stanford.edu

Marta Darby
Associate Attorney
Sierra Club National
2101 Webster St. Suite 1300
Oakland, CA 94612
415.977.5779
marta.darby@sierraclub.org

The Center is a non-profit environmental organization with 61,443 member activists, including members who live and recreate in the Miles City planning area in Montana. The Center uses science, policy and law to advocate for the conservation and recovery of species on the brink of extinction and the habitats they need to survive. The Center has and continues to actively advocate for increased protections for species and habitats in the Miles City planning area on lands managed by the BLM. The lands that will be affected by the proposed lease sale include habitat for listed, rare, and imperiled species that the Center has worked to protect. The Center's board, staff, and members use the lands within the planning area, including the lands and waters that would be affected by actions under the lease sale, for quiet recreation (including hiking and camping), scientific research, aesthetic pursuits, and spiritual renewal.

The Montana Chapter of the Sierra Club has approximately 3,200 members. The Sierra Club is a national nonprofit organization of approximately 815,000 members dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. Sierra Club members use the public lands in Montana, including the lands and waters that would be affected by actions under the lease sale, for quiet

recreation, aesthetic pursuits, and spiritual renewal. These areas would be threatened by increased oil and gas development that could result from the proposed lease sale.

II. Statement of Reasons as to Why the Proposed Lease Sale Is Unlawful:

BLM's proposed decision to lease the parcels listed above is substantively and procedurally flawed for the reasons discussed in the Center, et al's August 10th 2017 comment letter on the Environmental Assessment ("EA") for the MCFO December 2017 lease sale, which is incorporated by reference.[1] Additional reasons post-EA revisions and BLM's response to our comments, as to why the proposed lease sale is unlawful are provided below.

A. BLM Failed to Adequately Disclose or Analyze Water Quality, Quantity and Recreational Impacts to the Tongue River Dam and Reservoir in violation of the National Environmental Policy Act (NEPA) – Parcels 12-17-07, 12-17-09, 12-17-10, 12-17-11, 12-17-12, 12-17-13, 12-17-19, 12-17-20, 12-17-21, 12-17-22, 12-17-23, 12-17-27, 12-17-28, 12-17-29.

NEPA demands that a federal agency prepare an EIS before taking a "'major [f]ederal action significantly affecting the quality' of the environment." *Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1067 (9th Cir. 2002). In order to determine whether a project's impacts may be "significant," an agency may first prepare an EA. 40 C.F.R. §§ 1501.4, 1508.9. If the EA reveals that "the agency's action may have a significant effect upon the . . . environment, an EIS must be prepared." *Nat'l Parks & Conservation Ass'n v. Babbitt*, 241 F.3d 722, 730 (9th Cir. 2001) (internal quotations omitted). If the agency determines that no significant impacts are possible, it must still adequately explain its decision by supplying a "convincing statement of reasons" why the action's effects are insignificant. *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212 (9th Cir. 1998). Further, an agency must prepare all environmental analyses required by NEPA at "the earliest possible time." 40 C.F.R. § 1501.2. "NEPA is not designed to postpone analysis of an environmental consequence to the last possible moment," but is "designed to require such analysis as soon as it can reasonably be done." *Kern*, 284 F.3d at 1072.

NEPA establishes "action-forcing" procedures that require agencies to take a "hard look" at environmental consequences." *Ctr. for Biological Diversity v. United States DOI*, 623 F.3d 633, 642 (9th Cir. 2010). Chief among these procedures is the preparation of an EIS. *Id.* As demonstrated by the agency's generic and meager discussion of potential problems that could result from oil, gas and coal bed methane extraction and its failure to analyze the actual impacts of the lease sale, BLM's EA fails to take the requisite "hard look" at environmental impacts, in particular to the critical resource values provided to the region by the Tongue River Reservoir.

1. BLM failed to analyze water quality and quantity impacts from future conventional oil and gas development on the Tongue River Reservoir.

[1] Center for Biological Diversity et al., Comments on the Montana, Miles City Field Office's Competitive Oil and Gas Lease Sale: December 12, 2017 Lease Parcels (submitted August 10th, 2017).

As discussed in detail in our comment letter on the EA, BLM failed to even acknowledge, let alone analyze, any impacts to the Tongue River dam and reservoir. Fourteen parcels of this sale lie on top of, or adjacent to the dam, reservoir and Tongue River Reservoir State Park.[2] The Tongue River Reservoir is administered by the Tongue River Water Users' Association (TRWUA), and the reservoir itself stores water for 35 irrigators along the river.[3] When full to capacity, the reservoir stores 150,000 acre-feet of water.[4] Tongue River State Park is home to world class fishing and recreation found in Montana.[5] Tongue River Reservoir State Park receives approximately 80,000 visitors annually.[6]

The Tongue River basin is home to approximately 25,000 people, 88% of whom live in and around Sheridan, Wyoming.[7] Water rights filing information demonstrates that claims for water from the basin are far in excess of its historic delivery capability.[8] Just over 6,000 private water wells are drilled in the basin, 64% of which are in Montana, and most of which are for agricultural purposes.[9] The EA fails to address any site-specific impacts from future oil and gas development to the Tongue River Reservoir's water quality or quantity. The region's agricultural community relies heavily on this water, which withdrawal reserves are already at or near capacity.[10]

As detailed in our August comment letter, oil and gas extraction, especially coal bed methane extraction, is very water intensive. Some unconventional extraction techniques, most notably fracking, require the use of tremendous amounts of freshwater. Typically between two and 5.6 million gallons of water are required to frack each well.[11] Such high levels of water use are unsustainable. Water used in large quantities may lead to several kinds of harmful environmental impacts. The extraction of water for fracking can, for example, lower the water table, effect biodiversity, harm local ecosystems, and reduce water available to communities.[12]

Withdrawal of large quantities of freshwater from streams and other surface waters will undoubtedly have an impact on the environment.[13] Withdrawing water from streams will decrease the supply for downstream users, such as farmers or municipalities. Rising demand from oil and gas operators has already led to increased competition for water between farmers

---

[2] Center for Biological Diversity et al, Map of December 2017 Miles City, Montana lease sale parcels adjacent to or on the Tongue River Reservoir, found at Exhibit A (October 12, 2017).
[3] Fitzgerald, Timothy & Grant Zimmerman, Agriculture in the Tongue River Basin: Output, Water Quality, and Implications, Agriculture Marketing Policy Paper No. 39 (May 2013).
[4] *Id.* at 2.
[5] *Id* at 3.
[6] *Id.*
[7] Hydro Solutions Inc., 2007 Tongue River Hydrology Report: Tongue River Information Program (May 2007)
[8] *Id* at 2.
[9] *Id.*
[10] *Id.*
[11] U.S. Government Accountability Office, Unconventional Oil and Gas Development-Key Environmental and Public Health Requirements (2012) at 17.
[12] International Energy Agency, Golden Rules for the Golden Age of Gas, World Energy Outlook Special Report on Unconventional Gas (2012) at 31–32.
[13] *See* Entrekin, Sally, et al., Rapid Expansion of Natural Gas Development Poses a Threat to Surface Waters, 9 Frontiers in Ecology and the Environment 503, 507 (2011); USEPA Assessment on Drinking Water 2015 at 4-16.

and oil and gas operators. For example, in prior years, farmers in Colorado have paid at most $100 per acre-feet of water in auctions held by cities with excess supplies, but in 2013 energy companies paid $1,200 to $2,900 per acre-feet.[14] Reductions in stream flows may also lead to downstream water quality problems by diminishing the water bodies' capacity for dilution and degradation of pollutants. The EA fails to address this impact, particularly in the Tongue River Basin where water-use for farming is paramount.

Furthermore, withdrawing large quantities of water from subsurface waters to supply oil and gas production will likely deplete and harm aquifers. Removing water from surface water or directly from underground sources of water faster than the rate that aquifers can be replenished will lower the volume of water available for other uses. Depletion can also lead to compaction of the rock formation serving as an aquifer, after which the original level of water volume can never be restored.[15] Depleted aquifer water resources may also adversely affect agriculture, species habitat and ecosystems, and human health.

The freshwater in the area therefore would be greatly affected by the increased demand for water if fracking and other unconventional oil and gas extraction processes are permitted. The EA must analyze where water for oil and gas activities will be sourced, how much, and the effects on water sources under different alternatives. All of these effects must be analyzed in the context of increasing water scarcity in Montana due to climate change, drought, and increasing population growth. Failure to address these current and foreseeable future impacts on water usage in conjunction with the current demand for fresh water resources in the Tongue River Basin, is a clear violation of BLM's NEPA review requirements.

2. BLM failed to analyze coal bed methane extraction impacts on the Tongue River Reservoir.

Despite the MCFO's acknowledgment in its 2015 Reasonably Foreseeable Development Scenario that 15% or more of potential new wells within the MCFO are projected to be coalbed methane (CBM, also referred to as coalbed natural gas or CBNG), MCFO RMP EIS Appendix D at Min-91 & Table 3, the EA fails to disclose or analyze the potential for individual proposed lease parcels to result in CBM drilling, and associated produced water disposal. The question of CBM potential has very significant implications for the environmental consequences of the proposed leasing action, and is ignored entirely by BLM's EA. BLM's acknowledgment of the issue, however, is limited to the statement that the "Fort Union Formation . . . [is] the source for two coal mines operating in Big Horn County, Spring Creek and Decker, as well as coalbed natural gas wells in the area."[16] Despite the acknowledgment that numerous proposed parcels overlap coal seams, leases, and mines,[17] the EA contains no discussion or analysis of the likelihood of CBM development or its consequences.

---

[14] *Id.*
[15] Freyman, Monika and Ryan Salmon, Hydraulic Fracturing and Water Stress: Growing Competitive Pressures for Water, CERES, 9 (2013) ("Freyman 2013"), *available at* http://www.ceres.org/resources/reports/hydraulic-fracturing-water-stress-water-demand-by-the-numbers (accessed July 29, 2015).
[16] EA at 38.
[17] *Id.*

CBM development has significant environmental consequences not disclosed in the EA: (1) greater intensity of surface use, with ensuing impacts to both wildlife habitat and split-estate surface owners; and (2) significant quantities of saline produced water, the disposal of which poses risks to soils, surface water, wildlife, and agricultural and other land uses.

First, BLM acknowledges that coalbed methane development is likely to be more intensive in its fragmentation of the surface, and in its resulting effects to greater sage-grouse habitat, than "conventional" drilling:

> From 2001 to 2005, GRSG populations declined by 82 percent within the expansive coal bed natural gas fields (Walker et al. 2007a) in northeast Wyoming. Within the Miles City planning area, energy development is less widespread than in Wyoming. Within GRSG habitat in the Miles City planning area, 267,000 acres of federal fluid minerals (83,000 BLM-administered surface acres) are considered to be high potential for oil and gas development and 718,000 acres of federal fluid minerals (370,000 BLM-administered surface acres) are in areas with medium potential for oil and gas development.
>
> The Powder River Basin has had extensive development of coalbed natural gas in the last 10 to 15 years, fragmenting GRSG habitat throughout that area. With a well life of approximately 12 years, many of the coal bed natural gas wells that were originally drilled are depleted and ready for abandonment. Native vegetation over most buried pipelines has reclaimed its pre-disturbance composition. Utility roads and overhead power lines continue to degrade thousands of acres of GRSG habitat on private, federal, and state lands resulting in avoidance of otherwise suitable habitat (BLM 2013b).
>
> Though the BLM may restrict future leasing for oil and gas on Federal fluid mineral estate that it administers in GRSG habitat, existing leases remain valid unless they have already been developed, at which point they are valid for the life of the producing well. Any new development of wells on existing leases is subject to Conditions of Approval to avoid other resource damage, including GRSG.
>
> The Powder River Basin contains substantial energy resources, including oil, natural gas, and coal bed natural gas (USFWS 2013, pp. 64-65); conversely, the northern Montana population has less energy development. Coal bed methane wells typically last 12 to 18 years, while oil and gas wells may last 20 to 100 years in production (Connelly et al. 2004). Most coal bed natural gas drilling in the Powder River Basin has concluded, and current and future oil and gas development is anticipated to impact GRSG less due to horizontal drilling technology.[18]

[18] U.S. Bureau of Land Management, Montana State Office, Miles City Field Office Approved Resource Management Plan EIS at 4-151 (Sept. 2015), found at https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=79235.

The possibility of new CBM development undermines BLM's assumption that new drilling will "impact GRSG less due to horizontal drilling technology."

Second, coalbed methane development in the Powder River Basin is well-known to be associated with the production of large quantities of saline wastewater as a result of the need to dewater coal seams to produce gas. As summarized in a 2010 report by the National Academy of Sciences, CBM produced water poses significant treatment and disposal challenges, and has the potential for significant adverse effects on groundwater aquifers (quantity and quality), surface water quality, aquatic ecosystems and wildlife, soil quality and agricultural production, and physical effects on stream condition and hydrology.[19]

As of 2010, the Montana portion of the Powder River Basin faced substantially less existing coalbed methane development than the Wyoming side, with only two permitted CBM operations.[20] One of those operations produces more than 95% of all produced CBM water in Montana, and, under the 2010 Montana Supreme Court decision in *Northern Cheyenne Tribe v. Montana Dep't of Envt'l Quality*, is required to treat its produced water prior to discharge into the Tongue River.[21]

Substantiated effects of CBM produced water found by the National Academy of Sciences include:

(1) Drawdown of groundwater levels in coalbeds as result of pumping water from coalbeds during CBM extraction[22]
(2) Changes in groundwater quality associated with CBM produced water in surface impoundments[23]
(3) Effects on surface water quality due to discharge to perennial streams and rivers, ephemeral drainages, and surface impoundments[24]
(4) Effects on soil quality and agricultural production, including soil quality deterioration as a result of elevated sodicity of CBM produced water[25]
(5) Ecological effects due to "[p]roduction [of] numerous chemical constituents . . . several of which are potentially toxic to fish, macroinvertebrates, and other aquatic organisms"[26]

Specifically for Montana, the extent of groundwater aquifer drawdown is predicted to increase in the future as CBM production increases.[27] The EA contains no discussion or analysis

[19] National Academy of Sciences, Management and Effects of Coalbed Methane Produced Water in the Western United States, National Academies Press 94-155 (2010).
[20] NAS at 94.
[21] *Id.*
[22] *Id.* at 11, 1223.
[23] *Id.* at 113-114.
[24] *Id.* at 124. Impoundments strictly for storage or disposal are no longer permissible in Montana, *id.* at 119.
[25] *Id.* at 135.
[26] *Id.* at 138.

of either (1) how additional potential-CBM leasing may contribute to this groundwater drawdown, (2) how such drawdown may affect alluvial aquifers that supply domestic and/or livestock water, or (3) how such drawdown may affect the base flow of perennial water sources.[28] Water levels in the Anderson-Dietz and Canyon coals currently exploited for CBM in Montana are anticipated to take decades to return to original levels after pumping.[29]

The Tongue River, due to lesser levels of CBM development and more stringent water quality requirements in Montana than Wyoming, has in one study met water quality standards for two major measures of salinity (sodium absorption ratio, or SAR, and specific electrical conductance, or SC/EC).[30] Newer research, however, indicates that CBM produced water is increasing or has the potential to increase both electrical conductance and SAR in the Tongue River.[31]

Increased BLM leasing of federal minerals for potential CBM development, however, may have the potential to increase permitted discharge to the Tongue River, with resulting effects on water quality. As the Montana Supreme Court has found, "The groundwater associated with CBM extraction contains a naturally high saline content. The highly saline groundwater may degrade the quality of the receiving surface waterway. Surface waters degraded by CBM discharge water, in turn, may have an adverse effect on irrigated water and aquatic life. In fact, federal law defines the discharge water associated with CBM extraction as a 'pollutant' under the Clean Water Act (CWA)."[32] Although one study found that surface water in Montana currently suffers relatively little effect from CBM production,[33] BLM cannot ignore the fact that increased leasing within the Fort Union Formation has the potential to lead to renewed CBM development, and resulting increases in produced water disposal.

> Those water quality impacts are significant. As the NAS study summarized:
> Two studies of water quality in ephemeral streams have demonstrated that pH, specific conductance, and SAR values and concentrations of TDS, alkalinity, sodium, calcium, magnesium, potassium, arsenic, and selenium in CBM discharge water increased as discharged water traveled downgradient in ephemeral stream channels, while iron and manganese concentrations decreased. Once CBM produced water discharge stopped, TDS concentrations in these same ephemeral streams were higher than before CBM produced water was discharged to the stream channel.[34]

---

[27] NAS at 116.
[28] *See id.*
[29] *Id.* at 116.
[30] NAS at 126.
[31] U.S. Geological Survey, Potential Water-Quality Effects of Coal-Bed Methane Production Water Discharged along the Upper Tongue River, Wyoming and Montana 26 (2011)
[32] *Northern Cheyenne Tribe* ¶ 6, *citing Northern Plains Resource Council v. Fidelity Exploration & Dev. Co.*, 325 F.3d 1155, 1160 (9th Cir. 2003).
[33] NAS at 129.
[34] *Id.* at 134.

Apart from effects on ground and surface waters, CBM produced water has well-documented adverse effects on the quality and agricultural productivity of soils. As the NAS study reports:

> Potential effects of produced water on agricultural landscapes have been investigated extensively in the Powder River Basin. Browning et al. (2007) reported that soils repeatedly wetted with simulated Powder River Basin CBM produced water resulted in significant changes in chemical and physical properties over time, despite incidental simulated rainfall events. Irrigated soils, dominated by clay-sized particles, had consistent increases in waterholding capacity, leading to water-logged characteristics, while drought-prone soils (coarsegrained) lost their water-holding capacity, thereby rendering the soils even more prone to drought. Vance et al. (2008) reported that CBM produced water can cause modification of soil density and aeration, low plant-available water capacity, low hydraulic conductivity, increased swelling, and uneven soil wetting. Application of CBM produced water from the Powder River Basin over multiple years increased soil electrical conductivity (EC) and SAR to depths of 30 centimeters. Irrigation with CBM produced water also reduced surface infiltration rates and subsurface flow rates in the top 120 centimeters (Vance et al., 2008).[35]

Surface irrigation is one of the two principal water management methods for CBM produced water in the Montana portion of the Powder River Basin.[36] In offering new oil and gas leases within CBM-bearing formations, BLM cannot ignore the readily foreseeable indirect effects of CBM produced water disposal. Yet the EA fails to disclose any information regarding the quantity and/or quality of water likely to be produced, and the potential pathways for its disposal, including treated disposal into the Tongue River or irrigation use, with resulting effects on soil quality and agricultural productivity.

The possibility of discharge to the Tongue River also may have significant ecological effects not necessarily addressed by Montana DEQ water quality standards. CBM produced water has multiple constituents toxic to aquatic organisms and not necessarily regulated:

> CBM produced waters typically contain numerous chemical constituents (see Table 5.1), several of which are potentially toxic to fish, macroinvertebrates, and other aquatic organisms, when concentrations exceed toxicity threshold levels for these organisms. Stressors (whether described as constituents or contaminants that put stress on target species) of primary concern associated with CBM discharges include aluminum, arsenic, barium, beryllium, iron, manganese, and selenium, increased turbidity and TDS. Recent studies have also examined the toxicological effects of sodium bicarbonate, an ion of abundance in most CBM water. Most published research investigating these stressors indicates that increases in TDS have the greatest potential for direct toxicological impacts in receiving streams and rivers (Boelter et al., 1992; Confluence Consulting, 2004; Davis et al., 2006; Skaar et al., 2006; Farag et al., 2010). Recent studies have shown considerable

[35] *Id.* at 135.
[36] *Id.* at 96.

variation in the toxicity of TDS due to the difference in relative concentrations of specific ions comprising TDS (Mount et al., 1997; Dwyer et al., 1992). Specific ionic composition will also change seasonally and among watersheds (Pillard et al., 1999). Details of existing laboratory studies on the effects of TDS, of interactions between elevated TDS and other stressors, of sodium bicarbonate on organisms, and of field studies on the effects of CBM produced water on organisms are outlined in subsequent sections.

TDS as a Measure of Toxicity:
Many freshwater organisms are highly sensitive to changes in salinity, and discharge of high TDS effluents into receiving systems may result in physiologically stressful conditions due to alterations in osmotic conditions. Most of the available research on sensitivity to TDS and salinity used laboratory toxicity tests to predict responses of fish and macroinvertebrates and focused on conventional test species. These studies are used to understand the potential significance of various constituent concentrations to organisms. In laboratory tests on standard test organisms, major ions such as chlorine, bicarbonate, sulfate, sodium, calcium, magnesium, and potassium in combination with elevated TDS have been found to be toxic to some aquatic species (e.g., Goodfellow et al., 2000; Goetsch and Palmer, 1997; Pillard et al., 1999; Dickerson and Vinyard, 1999; Chapman et al., 2000; Soucek, 2007).[37]

Other studies found that direct exposure to CBM produced water, including from the Fort Union Formation, could potentially be toxic to up to 60% of aquatic organisms.[38] Although numerous factors influence real-world toxicity, BLM's EA again makes no effort to disclose or analyze the quantities of CBM produced water that could result, or the toxic constituents of those waters. It should be noted, however, that field studies show a wider range of fish species surviving in waters unaffected by CBM produced water than in those receiving CBM water.[39] In order to take NEPA's required hard look at indirect effects, BLM must make use of available scientific information to evaluate potential CBM water production, disposal, and resulting ecological effects.

Finally, in addition to toxicity, CBM water disposal effects the physical composition of perennial and ephemeral waters through physical change to drainages from erosion. These effects have the potential to harm both the ecological function of streams, and the agricultural uses of surface lands; the EA makes no mention of this foreseeable environmental effect.

B. BLM's Failure to Adequately Disclose or Analyze the Impacts to Greater Sage-Grouse Violates BLM Regulations Regarding Conservation of Bureau Sensitive Species and the Greater Sage Grouse Resource Management Plan Amendments (180 Parcels Containing Greater Sage-Grouse General Habitat Management Areas)

---

[37] *Id.* at 138.
[38] *Id.* at 140-41.
[39] *Id.* at 144.

BLM's EA and proposed FONSI violate both NEPA and FLPMA by (a) failing to disclose or evaluate site-specific indirect and cumulative impacts to greater sage-grouse populations and habitat from oil and gas development, and (b) failing to conform to the amended Miles City Resource Management Plan's mandatory requirement to prioritize leasing outside of greater sage-grouse habitat.

The EA completely fails to analyze site-specific impacts of oil and gas development on important wildlife areas, including 180 parcels within greater sage-grouse General Habitat Management Areas (GHMA), 45 of which are within 2 miles of a greater sage-grouse lek.[40] BLM Manual 6840 requires the agency "[t]o initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA."[41] Manual 6840 further states that it is the BLM's Policy to promote the "conservation and to minimize the likelihood and need for listing" Bureau sensitive species.[42] Piecemeal analyses of individual lease sales does not provide the appropriate perspective for examining and developing the proactive conservation measures necessary to reduce or eliminate landscape-level cumulative threats to greater sage-grouse from oil and gas leases.

Furthermore, pursuant to Manual 6840 it is the responsibility of State Directors to not only inventory BLM lands to determine the occurrence of BLM special status species, but also to determine "the condition of the populations and their habitats, and how discretionary BLM actions affect those species and their habitats."[43] The leasing of federal lands for oil and gas extraction is a discretionary BLM action that has the potential to adversely affect the sensitive greater sage-grouse.

Moreover, the greater sage-grouse is not just a BLM sensitive species, but one that has led to a massive revision of BLM land use plans throughout the west in an effort to stave off its extinction. The U.S. Fish and Wildlife Service ("USFWS") identified in 2010 that the greater sage grouse warranted Endangered Species Act protection, that it faced numerous threats to its continued survival, and that inadequacy of regulatory mechanisms in general (and the inadequacy of protections in federal land-use plans in particular) were contributing to the need to list the species. In September 2015, the Service declined to list the species, citing, in part, BLM's recent sage-grouse RMP amendments. We have contended, and continue to contend, that those plans do not provide the level of protection that the best available science says is necessary to reverse sage-grouse decline and recover the species. However, the 2015 RMP amendments do incorporate a great deal of information and analysis regarding the species and effects of oil and gas development, and adopt both mitigation requirements for development within various categories (priority, general, and restoration habitat management areas) and an accompanying mandate to "prioritize" leasing outside of sage-grouse habitat, both priority and general.

---

[40] EA at 27-28.
[41] *Id.* at § .02 (emphasis added).
[42] *Id.* at § .06.
[43] *Id.* at § .04.

BLM's proposed decision to lease the parcels within Priority Habitat Management Areas (PHMAs), General Habitat Management Areas (GHMAs) or Restoration Habitat Management Areas (RHMAs), will not conform to the Amended RMPs and the agency's IM 2016-143 unless the leasing EIS fully evaluates site-specific impacts to Greater Sage-Grouse, and prioritizes leasing outside both PHMAs and GHMAs. Failure to conform to the mandatory requirements of the approved Resource Management Plan is a violation of FLPMA and its implementing regulations.[44]

IM 2016-143's purpose is to provide consistency across the agency when leasing decisions impact Greater Sage-Grouse habitat. It provides a "prioritization sequence" for BLM state offices to follow when choosing to lease areas near or in Greater Sage-Grouse habitats. The IM prioritization sequence is as follows:

> 1. Lands outside of GHMAs and PHMAs: BLM State Offices will first consider leasing EOIs for lands outside of PHMAs and GHMAs. These lands should be the first priority for leasing in any given lease sale.
> 2. Lands within GHMAs: BLM State Offices will consider EOIs for lands within the GHMAs, after considering lands outside of both GHMAs and PHMAs. When considering the GHMA lands for leasing, the BLM State Office will ensure that a decision to lease those lands would conform to the conservation objectives and provisions in the GRSG Plans (e.g., Stipulations).
> 3. Lands within PHMAs: BLM state offices will consider EOIs for lands within PHMAs after lands outside of GHMAs and PHMAs have been considered, and EOIs for lands within GHMA have been considered. When considering the PHMA lands for leasing, the BLM State Offices will ensure that a decision to lease those lands would conform to the conservation objectives and provisions in the GRSG Plans (e.g., Stipulations) including special consideration of any identified SFAs.

IM 2016-143 at 4.

According to BLM's EA, nearly the entire proposed lease sale (180 parcels) falls within GHMA . Forty-five parcels in GHMA habitat also fall within two miles of leks,[45] which provide "important life-history habitat features," IM 2016-143 at 10. Under the sage-grouse RMP amendments and prioritization policy, BLM must consider, prior to determining to issue leases, factors including proximity to existing leases, oil and gas potential, and, importantly the proximity of the proposed leases to "important life-history habitat features (for example, distance from any active sage-grouse leks)." IM 2016-143 at 4.

IM 2016-143 further instructs BLM that "[a]t the time the leasing priority is determined, when leasing within GHMA or PHMA is considered, BLM should consider, first, areas determined to be non-sage-grouse habitat and then consider areas of lower value habitat." *Id.* The

---

[44] 43 U.S.C. § 1732(a) (management of the public lands must be "in accordance with the land use plans") 43 C.F.R. § 1610.5-3(a) (resource management authorizations and actions "shall conform to the approved plan")

[45] EA at 28.

EIS must contain sufficient detailed, site-specific analysis to provide BLM and the public with sufficient information to permit a reasonable determination of whether the proposed leasing action could be limited to areas of either non-sage-grouse habitat or areas of lower value habitat. Appendix D to the EA fails entirely to engage in any site-specific analysis or weighing of the values of the proposed lease parcels for either greater sage-grouse habitat needs or mineral potential. Instead, Appendix D merely recites the factors in IM 2016-143, without any analysis whatsoever. The Miles City Field Office Resource Management Plan expressly requires that "Priority will be given to leasing and development of fluid mineral resources . . . outside of PHMA and GHMA."[46]

Any proposed leasing must conform to a key management prescription of those plans – the obligation to "prioritize the leasing and development of fluid mineral resources outside GRSG habitat." The BLM is subject to clear direction in the IM 2016-143 and the RMP amendments that its sage-grouse RMP plans and conservation strategy rely not only on stipulations within designated habitats, but also on a larger strategy of prioritizing development outside of all sage-grouse habitats. Leasing 180 parcels of GHMA without adequate consideration of impacts on grouse populations and life history requirements, has the potential to violate of IM 2016-143 and the Greater Sage-Grouse RMP amendments.[47] It is simply impossible to understand how offering leases within sage-grouse habitat is consistent with the IM 2016-143 prioritization sequence and the RMP requirement to prioritize leasing outside such habitat.

BLM has also arbitrarily refused to consider reasonable alternatives other than the alternatives of no leasing and leasing all proposed sage-grouse habitat. In their comments on the Draft EA, the Wilderness Society proposed an alternative that would exclude from leasing, pursuant to the prioritization objective and IM 2016-143, over 130 lease parcels that are both (a) isolated from existing leases, and (b) classified by BLM as "low potential" for oil and gas.[48] BLM's only response to this reasonable alternative is to state that "[t]he BLM is following the guidance in IM 2016-143 regarding prioritizing leasing outside GRSG habitat, and chose to defer many of these GRSG parcels for almost two years now; therefore, there is no need to analyze a separate alternative analyze prioritizing leasing outside habitat."[49] The conclusion does not follow – BLM is not relieved of its obligation under NEPA to consider all reasonable alternatives simply because it has previously delayed a decision.

In the Response to Comments, BLM responds to multiple commenters raising the agency's failure to prioritize leasing outside of greater sage-grouse habitat by noting that (1) four lease sales since the 2015 plan amendments have included minimal PHMA, and (2) that BLM deferred some sage-grouse habitat within the proposed Miles City December 2017 sale for nearly two years.[50] Neither of these responses amounts to a reasoned consideration ande balancing of the factors in IM 2016-143. Nor has BLM offered any evidence that the condition of greater sage-grouse populations and habitat in the relevant Management Zone (MZ 1) has changed for

[46] USBLM Miles City Field Office, Approved RMP EIS 2-8 (Sept. 2015)
[47] EA at 2.
[48] Letter from the Wilderness Society to BLM MCFO re December 2017 Lease Sale at 5-6 & Figure 1
[49] EA at 266.
[50] EA at 265, 266.

the better so drastically in those two years that it is justified in ignoring its obligation to prioritize leasing outside both GHMA and PHMA as required by the approved RMP.

It is undisputed that sage-grouse populations in central and eastern Montana are vastly reduced from pre-development levels due to habitat loss, a major source of which is oil and gas development and related disturbance.[51] For Greater Sage-Grouse Management Zone 1, which includes the MCFO, BLM has found that "GRSG populations across M[anagement] Z[one] I face pressures from energy development, conversion to agriculture, and such stressors as disease, drought, and fire. These threats are magnified under the stress of habitat fragmentation and the isolation of small populations in the Dakotas, on the eastern edge of the species' range." Miles City Field Office Proposed Resource Management Plan Amendments FEIS 4-176. In its EIS for that Resource Management Plan amendment, the BLM acknowledges that even if the plan is implemented, sage-grouse populations may continue to decline or may persist at a "reduced level." MCFO PRMP FEIS at 4-176. In considering whether or not to make available for leasing additional sage-grouse habitats in the MCFO, BLM must assess the current state of sage-grouse populations in management zone 1, the individual populations and seasonal habitats that may be affected by the proposed leases, and the implications of development for local and regional grouse survival and recovery.

In the spring, during the breeding season, sage grouse males seek out courtship areas, known as "leks" that are open areas of bare soil, short grass steppe, windswept ridges, or exposed knolls in which to gather and perform their ritualized mating displays and breed with females.[52] An important factor affecting lek location appears to be proximity to, as well as configuration and abundance of, nesting habitat.[53] Leks are normally "traditional", and occur in the same location each year. Some leks studied by early investigators have persisted for 28–67 years since first counted. The presence of broken bird-point arrowheads on some leks suggests that sage-grouse had used those sites for at least 85 years. Leks and the number of attending males are regularly used to monitor the long-term status of populations because of their traditional locations.[54]

In a recent study looking at greater sage-grouse across six western states, it was reported that 90% of the active leks were surrounded by areas having greater than 40% sagebrush cover. Further, 99% of the active leks were in landscapes with less than 3% of the area in human development.[55] Successful leks occurred in areas with low road densities – less than 1 km/km² of secondary roads, less than .05km/km² of highways, and less than .01 km/km² of interstate highways. Another pertinent finding was that habitat suitability was highest when power line densities were less than .06 km/km²; leks were absent where power line densities exceeded .2

---

[51] *See* USBLM Miles City Field Office, Proposed RMP FEIS 4-172 to 4-176.

[52] Manier, et al., Conservation buffer distance estimates for Greater Sage-Grouse—A review: U.S. Geological Survey Open-File Report 2014–1239, http://dx.doi.org/10.3133/ofr20141239 ("Manier 2013")

[53] Connelly, J. W. et al., Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats, Western Association of Fish and Wildlife Agencies. Cheyenne, Wyoming (2004) ("Connelly 2004")

[54] *Ibid.*

[55] Knick, Steven T. et al., Modeling ecological minimum requirements for distribution of greater sage-grouse leks: implications for population connectivity across their western range, U.S.A., 3 Ecology and Evolution 6: 1539 (2013) ("Knick 2013")

km/km². With respect to communication/cellular towers, leks were absent when tower densities exceeded .08 km/km².[56] Wisdom et al. reported that areas extirpated of sage grouse had 27 times the human density, 3 times more area in agriculture, were 60% closer to highways, and had 25% higher density of roads than what was found in occupied habitat. Also, it was found that power lines and cellular towers had significant impacts on whether or not a habitat was occupied.[57]

BLM's own experts recommend a 4-mile No Surface Occupancy ("NSO") buffer for all active leks in Priority Habitats, Focal Areas, Connectivity Areas, and General Habitats for existing oil and gas leases and permitted activities that would potentially disturb breeding, nesting, and brood-rearing sage grouse, with exceptions available for mineral leases or claims located entirely within this buffer for a wellsite of minimal size and intrusion to be placed at a location most distal from an active lek or leks. Proposed stipulation NSO 11-80, by contrast, limits surface occupancy only within 0.6 miles of leks. Because the stipulation falls so far short of the scientifically-recommended conservation needs of the species, reliance on the stipulation alone, absent compliance with the directive to prioritize leasing outside habitat, fails either to comply with the Amended RMP or to justify its assumptions regarding adequacy for maintaining sage-grouse populations.

BLM, in its GRSG RMP Amendments, and in the proposed stipulations for these lease sales, implements buffer distances in accordance with the United States geological Survey (USGS) Report as described in Appendix B to the GRSG RMP Amendment. These are set at 3.1 miles for roads and energy infrastructure, 2 miles for tall structures, and 1.2 miles for low structures, and represent the lowest (least protective) end of the protection spectrum described by Manier et al. (2014).[58] These buffer distances are inappropriately small. While they may be adequate to protect breeding grouse on the lek, they will allow these disruptive and damaging features to be located in the midst of prime nesting habitat, which extends 5.3 miles from the lek site (Holloran and Anderson 2005).

Studies published by Braun in 1977 and Connelly in 2000 initially set the standard that leks should be buffered by a 3.2 km or 2 mile radius.[59] However, more recent studies have suggested that the 3.2 km is inadequate for the conditions needed for successful breeding and nesting. Connelly et al. reported in their assessment for the Western Governors' Association that road traffic within 7.6 km had adverse impacts on male grouse attendance at leks.[60] Sage grouse nesting grounds are located typically in a radius of 5.3 miles of the lek (and sometimes farther). Because the nesting period is equally sensitive and equally important to survival of and recruitment to sage grouse populations, larger buffers are necessary. Coates et al. (2013) found that for the Mono Basin sage grouse population, 90% of habitat use occurred within 4.66 miles

---

[56] *Ibid.*
[57] Wisdom et al., Factors Associated With Extirpation of Sage-Grouse. Pages 451-472 *in* S. T. Knick and J. W. Connelly (eds). Greater Sage-Grouse: ecology and conservation of a landscape species and its habitats. Studies in Avian Biol. Series, vol. 38, Univ. Calif. Press. Berkeley, CA (2011).
[58] Manier 2013.
[59] Connelly, J. W. et al., Guidelines to manage sage grouse populations and their habitats. Wildl. Soc'y Bull., 28(4): 967-985 (2000).
[60] Connelly 2004.

of a lek.[61] The Coates et al. results are conservative relative to activity patterns found for other sage grouse populations across the West.

The National Technical Team observed, "it should be noted that protecting even 75 to 80% of nesting hens would require a 4 mile radius buffer (Table 1). Even a 4 mile NSO buffer would not be large enough to offset all the impacts reviewed above."[62] Importantly, a 0.6-mile lek buffer covers by area only 2% of the nesting habitat encompassed by a 4-mile lek buffer, which takes in approximately 80% of nesting grouse according to the best available science. BLM's own experts recommended for existing fluid mineral leases that a 4-mile NSO buffer should be applied to leks, with an exception allowed in cases where the entire lease is within 4 miles of a lek, in which case a single wellsite should be permitted in the part of the lease most distal to the lek.[63] This recommendation is reinforced by a similar recommendation from western state agency biologists, who also recommended a 4-mile NSO buffer.[64]

Numerous other studies support the NTT's recommendations. It was found in one study that a 3 km buffer encompassed only 45% of the nesting females associated with that lek, while a 5 km buffer accommodated 64% of the nests.[65] It was also reported that nests located within 1 km of another nest tended to have lower nesting success likely due to enhanced prey detection by predators.[66] The same study further suggests that to protect and maintain sage grouse populations residing in relatively contiguous sagebrush habitats, managers should minimize or halt actions that reduce the suitability of nesting habitats within 5 km of a lek until detailed site specific monitoring suggested otherwise.[67] It also noted that a substantial number of females nested distances greater than 5 km from a lek and that this additional increment of individual recruitment could be important for population viability.[68]

Indeed, placing a heavy focus on habitat protection around leks is not suitable or sufficient for ensuring the viability of sage grouse populations. Studies have shown that both nest and brood rearing habitats are on average 6 km from leks, and it is not until 10 km from leks that one reaches the threshold where 90% of the habitat occurs.[69] Johnsgard indicated that there was

---

[61] Coates, P.S. et al., Evaluating greater sage-grouse seasonal space use relative to leks: Implications for surface use designations in sagebrush ecosystems, J. Wildl. Manage. 77: 1598-1609. doi: 10.1002/jwmg.618 (2013)

[62] Naugle, et al., (NTT) Sage-grouse National Technical Team, A Report on National Greater Sage-grouse Conservation Measures (2011) ("Naugle et al. 2011 NTT Report"), *available at* www.blm.gov/pgdata/etc/medialib/blm/co/programs/wildlife.Par.73607.File.dat/GrSG%20Tech%20Team%20Report.pdf.

[63] *Id.*

[64] Apa, T. et al., Using the Best Available Science to Coordinate Conservation Actions that Benefit Greater Sage-grouse Across States Affected by Oil & Gas Development in Management Zones I-II (Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming) (2008). Online at http://www.ourpubliclands.org/files/upload/ti-State_ScienceGroupDocument_FINAL_01-28-08.pdf.

[65] Holloran, Matthew J. and Stanley H. Anderson, Spatial distribution of greater sage-grouse nests in relatively contiguous sagebrush habitats. The Condor 107:742-752 (2005).

[66] Ibid.

[67] Ibid.

[68] Ibid.

[69] Aldridge, Cameron L. and Mark S. Boyce, Linking Occurrence and Fitness to Persistence: Habitat-Based Approach for Endangered Greater Sage-Grouse. Ecological Applications 17(2):508-526 (2007). ("Aldridge and Boyce").

no obvious relationship between lek location and nest site. In 5 different studies involving more than 300 nests the average distance between lek and Sage-grouse nest where the females was first seen or captured was 3.5 mi (5.6 km).[70] Nesting distances could be much greater than this average. For example, a majority (~90%) of nesting and brood-rearing habitat was within 10 km (6.2 miles) of active leks in Alberta;[71] 97 percent of nests were found within 6.2 miles of leks where females were marked in the Powder River Basin in Montana and Wyoming.[72] Walker et al. found in another study that the impacts from energy development on lek persistence and nesting were still apparent at a distance of 6.4 km from the disturbance.[73]

As previously mentioned, although leks are important focal points for breeding and subsequent nesting in the surrounding region, other seasonal use areas and habitat requirements may be equally limiting to sage grouse populations.[74] Brood occurrence is greater in more heterogeneous sagebrush stands, where patchy cover reduces predator efficiency but still affords necessary for resources. Sage-grouse are more abundant in patchy habitats containing a mix of mesic, forb-rich foraging areas interspersed within suitable sagebrush escape cover.[75] Broods are typically found in areas near nest sites for the first 2 to 3 weeks after hatching. Such habitat needs to provide adequate cover and areas with sufficient forbs and insects to ensure chick survival in this life stage.[76]

Suitable and diverse winter habitats are critical to the long-term persistence of grouse populations.[77] As summer ends, the diet of sage-grouse shifts from a diet of insects, forbs and sagebrush to one comprised almost entirely of sagebrush.[78] In winter, the grouse depends heavily on sagebrush for cover, habitat selection being driven by snow depth, the availability of sagebrush above the snow, and topographic patterns that favorable mitigate the weather.[79] Abundance of sagebrush at the landscape scale greatly influences the choice of wintering habitat. One study found that the grouse selected for landscapes where sagebrush dominate over 75% of the landscape with little tolerance for other cover types.[80] Because appropriate wintering habitat occurs on a limited basis and because yearly weather conditions influence its availability, impacts to wintering habitat can have large disproportional effects on regional populations. One study in Colorado found that 80% of the wintering use occurred on only 7% of the area of

---

[70] Johnsgard, P.A. Grassland grouse and their conservation. Smithsonian Institution Press, Washington and London (2002).
[71] Aldridge and Boyce. 2007.
[72] Doherty, K. E. et al., Greater Sage-grouse nesting habitat: the importance of managing at multiple scales, J. Wildl. Manage. 74(7): 1544-1553 (2010).
[73] Walker, B.L., et al., Greater sage- grouse population response to energy development and habitat loss, 71 Journal of Wildlife Management 2644 (2007).
[74] Knick et al. 2013.
[75] Manier et al. 2013. Page 21.
[76] Ibid.
[77] Doherty, Kevin E., et al., Greater Sage-Grouse Winter Habitat Selection and Energy Development, 72 Journal of Wildlife Management 1:172, doi: 10.2193/2006-454 (2008) ("Doherty 2008").
[78] Ibid.
[79] Manier et al. 2013. Page 21.
[80] Doherty et al. 2008.

sagebrush available.[81] Additionally, some degree of site fidelity to winter areas is suspected to exist, and wintering areas not utilized in typical years may become critical in severe winters. [82]

Lower elevation sagebrush winter habitat used by sage grouse may also constitute important winter areas for big game and early spring forage areas for domestic livestock. Due to differing vegetative condition requirements, land treatments on lower elevation sagebrush areas to increase big game or livestock forage at the expense of sagebrush cover and density could have long-term negative consequences for the grouse.[83]

None of these factors or impacts have been weighed or considered, under either NEPA or FLPMA and the BLM's own guidance regarding its prioritization objective. By failing to evaluate the adequacy of its sage-grouse stipulations, the site-specific impacts of authorizing non-NSO drilling, and the relative values of the parcels at issue for both grouse habitat and mineral potential, BLM's Final EA and Proposed FONSI both violate NEPA's hard look and alternatives requirements and FLMPA's requirement that implementing actions conform to approved Resource Management Plan.

Additionally, BLM's failure to consider site-specific impacts to greater sage-grouse is compounded by its failure to disclose or analyze the potential that these leases will be exploited for coalbed methane development. BLM's Miles City RMP EIS admits that, due to extensive habitat fragmentation from coalbed methane development, "[f]rom 2001 to 2005, GRSG populations declined by 82 percent within the expansive coal bed natural gas fields (Walker et al. 2007a) in northeast Wyoming."[84]

III. Conclusion

For all of the reasons stated above, the lease sale will, if adopted unchanged, result in violations of BLM's obligations under NEPA, FLPMA and the ESA. An appropriate response to this protest would be for BLM to defer the lease sale and commence preparation of an EIS that (a) adequately considers site-specific impacts, (b) considers and reasonable range of alternatives, and (c) conforms to the Approved RMP.

Please do not hesitate to contact me if you have any questions.

Sincerely,

[81] Ibid.
[82] Caudill, Danny, et al., Winter habitat use by juvenile greater sage-grouse on Parker Mountain, Utah: implications for sagebrush management, 7 Human-Wildlife Interactions 2:250 (2013) ("Caudill 2013").
[83] Caudill et al. 2013.
[84] Miles City Field Office Proposed RMP FEIS at 4-151 (2015).

Diana Dascalu-Joffe
Senior Attorney
Center for Biological Diversity
1536 Wynkoop, Suite 421
Denver, CO 80202
720-925-2521
ddascalujoffe@biologicaldiversity.org

Jonathan Matthews
Chairperson, Montana Chapter of the Sierra Club
1601 N. Benton Avenue
Helena, MT 59625
j.c.matthews@alumni.stanford.edu

Marta Darby
Associate Attorney
Sierra Club National
2101 Webster St. Suite 1300
Oakland, CA 94612
415.977.5779
marta.darby@sierraclub.org

List of References

Aldridge, Cameron L. and Mark S. Boyce, Linking Occurrence and Fitness to Persistence: Habitat-Based Approach for Endangered Greater Sage-Grouse. 17 Ecological Applications 2, 508 (2007)

Apa, T. et al., Using the Best Available Science to Coordinate Conservation Actions that Benefit Greater Sage-grouse Across States Affected by Oil & Gas Development in Management Zones I-II (Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming) (2008)

Caudill, Danny, et al., Winter habitat use by juvenile greater sage-grouse on Parker Mountain, Utah: implications for sagebrush management, 7 Human-Wildlife Interactions 2, 250 (2013)

Center for Biological Diversity et al., Comments on the Montana, Miles City Field Office's Competitive Oil and Gas Lease Sale: December 12, 2017 Lease Parcels (submitted August 10th, 2017)

Center for Biological Diversity, Map of December 2017 Miles City, Montana lease sale parcels adjacent to or on the Tongue River Reservoir (2017)

Coates, P.S. et al., Evaluating greater sage-grouse seasonal space use relative to leks: Implications for surface use designations in sagebrush ecosystems, 77 Journal Wildlife Management 1598, (2013), doi: 10.1002/jwmg.618

Connelly, J. W. et al., Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats, Western Association of Fish and Wildlife Agencies (2004)

Connelly, J. W. et al., Guidelines to manage sage grouse populations and their habitats, 28 Wildlife Society Bulletin 4, 967 (2000)

Doherty, K. E. et al., Greater Sage-grouse nesting habitat: the importance of managing at multiple scales, 74 Journal Wildlife Management 7, 1544 (2010)

Doherty, Kevin E., et al., Greater Sage-Grouse Winter Habitat Selection and Energy Development, 72 Journal of Wildlife Management 1, 172 (2008), doi: 10.2193/2006-454

Entrekin, Sally, et al., Rapid Expansion of Natural Gas Development Poses a Threat to Surface Waters, 9 Frontiers in Ecology and the Environment 503, 507 (2011)

Fitzgerald, Timothy & Grant Zimmerman, Agriculture in the Tongue River Basin: Output, Water Quality, and Implications, Agriculture Marketing Policy Paper No. 39 (May 2013)

Freyman, Monika and Ryan Salmon, Hydraulic Fracturing and Water Stress: Growing Competitive Pressures for Water, CERES (2013)

Holloran, Matthew J. and Stanley H. Anderson, Spatial distribution of greater sage-grouse nests in relatively contiguous sagebrush habitats, 107 The Condor (2005)

Hydro Solutions Inc., 2007 Tongue River Hydrology Report: Tongue River Information Program (May 2007)

International Energy Agency, Golden Rules for the Golden Age of Gas, World Energy Outlook Special Report on Unconventional Gas (2012)

Johnsgard, P.A. Grassland grouse and their conservation, Smithsonian Institution Press, Washington and London (2002)

Knick, Steven T. et al., Modeling ecological minimum requirements for distribution of greater sage-grouse leks: implications for population connectivity across their western range, U.S.A., 3 Ecology and Evolution 6,1539 (2013)

Letter from Nada Culver Senior Counsel and Director, BLM Action Center to Irma Nansel, Miles City Field Office, ("December 2017 Lease Sale")

Manier, et al., Conservation buffer distance estimates for Greater Sage-Grouse—A review: U.S. Geological Survey Open-File Report 2014–1239 (2014)

Naugle, et al., Sage-grouse National Technical Team, A Report on National Greater Sage-grouse Conservation Measures (2011)

National Academy of Sciences, Management and effects of coalbed methane produced water in the western United States, National Academies Press (2010)

U.S. Bureau of Land Management, Montana State Office, Miles City Field Office Approved Resource Management Plan EIS (Sept. 2015), https://eplanning.blm.gov/epl-frontoffice/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=79235

U.S. Environmental Protection Agency, Assessment of the Potential Impacts of Hydraulic Fracturing for Oil and Gas on Drinking Water Resources (2015)

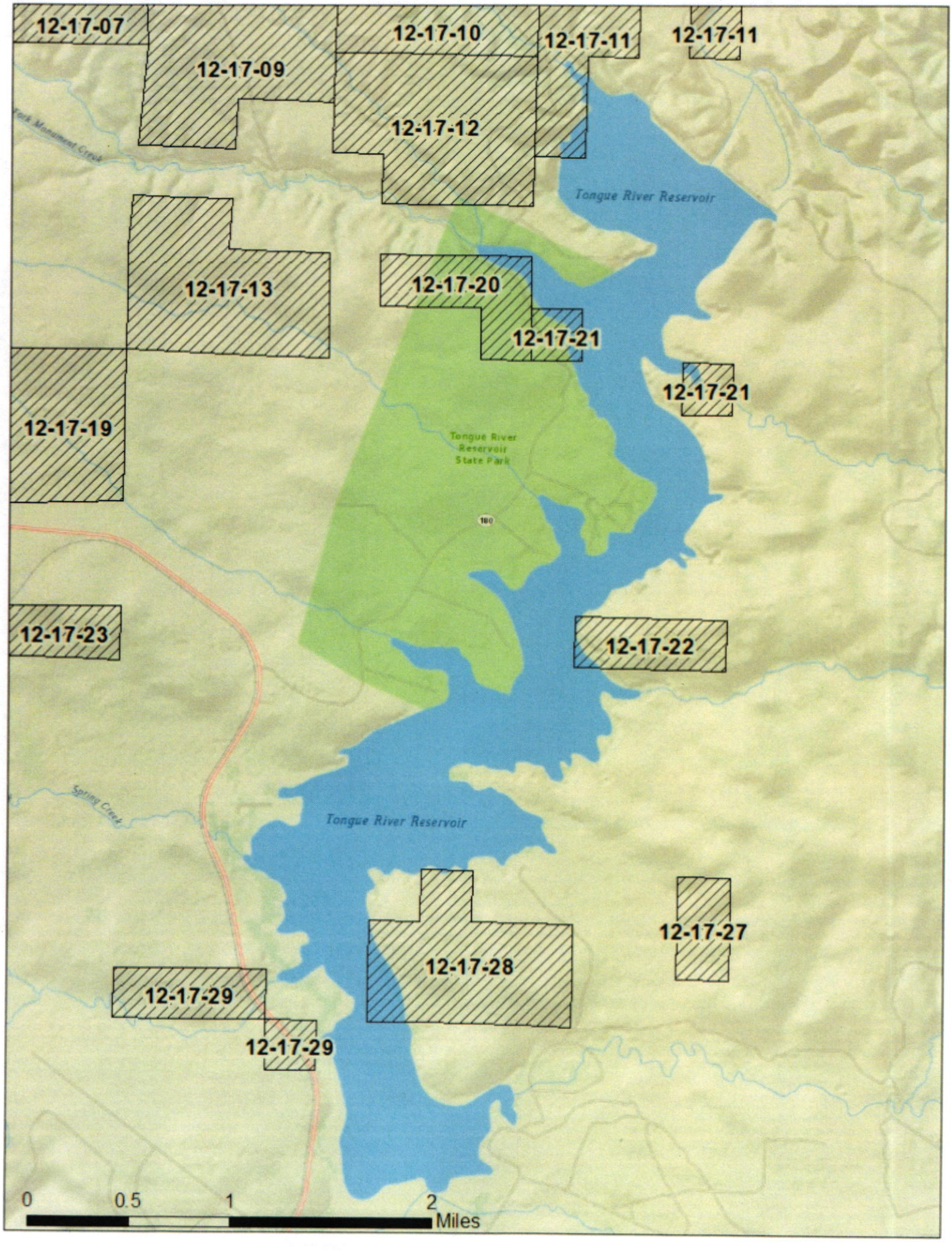
U.S. Geological Survey, Potential Water-Quality Effects of Coal-Bed Methane Production Water Discharged along the Upper Tongue River, Wyoming and Montana 26 (2011)

U.S. Government Accountability Office, Unconventional Oil and Gas Development – Key Environmental and Public Health Requirements (2012)

Walker, B.L., et al., Greater sage- grouse population response to energy development and habitat loss, 71 Journal of Wildlife Management 2644 (2007)

Wisdom et al., Factors Associated With Extirpation of Sage-Grouse (2011)

EXHIBIT A


12-17-07
12-17-09
12-17-10
12-17-11
12-17-11
12-17-12
Tongue River Reservoir
12-17-13
12-17-20
12-17-21
12-17-21
12-17-19
Tongue River Reservoir State Park
180
12-17-23
12-17-22
Spring Creek
Tongue River Reservoir
12-17-27
12-17-28
12-17-29
12-17-29
0
0.5
1
2
Miles